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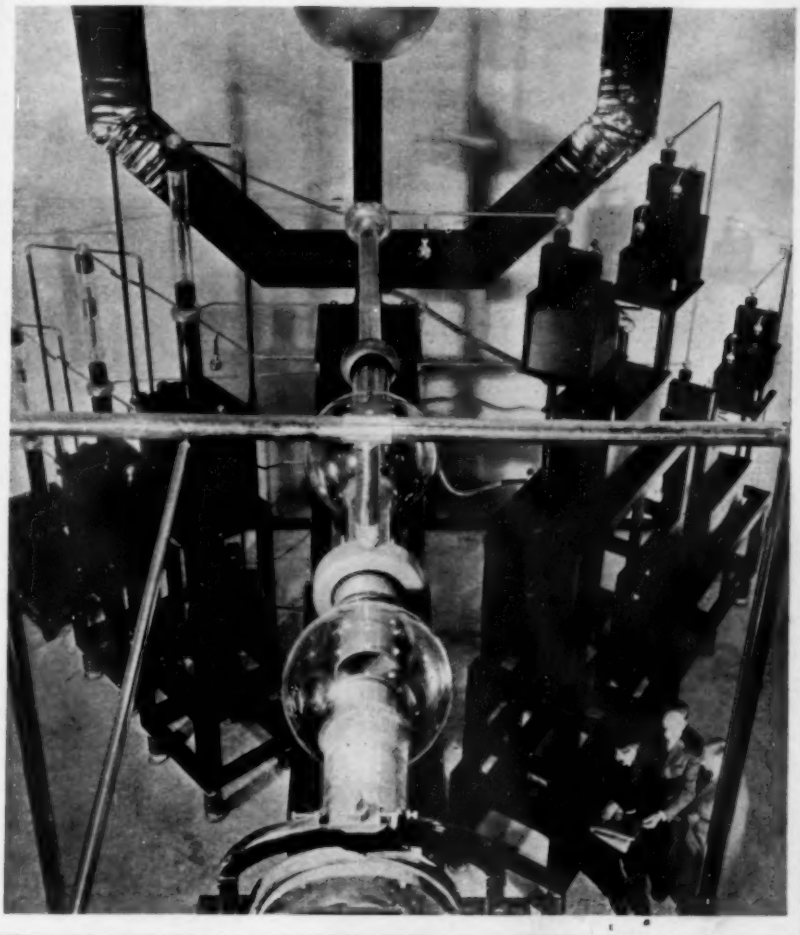
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



MAY 20, 1933

New Tool For Cancer Treatment

See Page 309

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SCIENCE NEWS LETTER

VOL. XXIII *No. 632*

The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

Not one comet in ten can be seen with the naked eye.

The standard currency of the Roman Republic was silver.

The Romans built approximately 50,000 miles of improved highway.

Wall paper that will not peel off is an invention reported from Germany.

The words tea and coffee are very nearly the same in all modern languages.

Indians in California used to barbecue stalks of Yucca, a dish which the Spaniards found inviting.

John Quincy Adams took a special interest in astronomy and urged the establishment of a national observatory.

In a study of over 500 pairs of twins it was found that one twin was inclined to be a leader in three-fourths of the cases.

Most lawns are cut too often and too short, says a specialist on grasses, who advises against mowing a lawn on any regular schedule.

Flowers from the Brazil-nut tree are rarely gathered for botanical collections, because they grow at least 60 feet from the ground.

Since Manchuria is not able to keep up its exports of soybeans, European countries are bidding for American-grown soybeans.

Glass silk, a pliable and silky material made from fine glass threads, is reported to be a good insulating material and effective in deadening sound between rooms.

The Kansas State Senate has passed a bill which provides that a pedestrian injured at night on a state highway may not recover damages unless at the time of the accident he was carrying a red light visible for 500 feet.

WITH THE SCIENCES THIS WEEK

AGRICULTURE
What is the estimated yield of this year's winter wheat? p. 313.

ANATOMY
Whose was the "best animal brain" ever studied? p. 318.—*The Brain From Ape to Man—Frederick Tilney—Hoeber*, 1928, 2 *vol.*, $25.

ARCHAEOLOGY
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ASTRONOMY
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CHEMISTRY
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What are advantages of the accelerator-brake pedal? p. 312.

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FORESTRY
What is an arboretum? p. 313. *Tree Crops—J. Russell Smith—Harcourt Brace*, 1929, $4.

MEDICINE
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What does an "anti-paresis" mosquito cost? p. 307. *Medical Entomology—Robert Matheson—Thomas*, 1932, $5.

Why is gelatin a desirable food for Bright's disease patients? p. 312.

OCEANOGRAPHY
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TEXTILES
How many moth-proofing materials have been patented? p. 315. *Manual of Injurious Insects—Glenn W. Herlick—Holt*, 1925, $4.50.

ZOOLOGY
Where is the smallest species of chimpanzee found? p. 313.

These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Book Dept., Science News Letter, at publishers' prices, prepaid in U. S.

MEDICINE

Live Mosquitoes Replaced by Glands in Paresis Treatment

Discovery Saves Government Money and Provides Better Weapon Against General Paralysis of Insane

CUTTING the costs to the government of producing and transporting malaria-infected mosquitoes for treatments of paresis is the latest accomplishment of Dr. Bruce Mayne, U. S. Public Health Service research worker. Paresis, also known as general paralysis of the insane, is a brain disease resulting from syphilis.

Working in cooperation with the State Hospital for the Insane at Columbia, S. C., Dr. Mayne has been in charge of the breeding of special strains of mosquitoes used to give malaria to paresis patients. The mosquitoes are shipped to distant hospitals, out of the malaria belt, for use in treatments. It cost the government $200 per mosquito, Dr. Mayne figured, to get the mosquito bred, infected with malaria, and transported to the paresis patient. Now instead of shipping the mosquito, Dr. Mayne first uses it for patients at the South Carolina Hospital, and then removes its salivary gland, which contains the malaria parasites, and ships this to the distant institutions.

The cost of shipping a package of infected salivary glands to San Francisco by air mail was $5.50. If mosquitoes had been sent, it would have been necessary to send an attendant to care for them en route. The additional cost for his railroad fare, salary and other expenses can easily be calculated. Dr. Mayne has not yet figured the total saving to the government. Besides saving on transportation costs, which is considerable, since the San Francisco shipment was the most expensive, there is saving on production costs. Each mosquito can be used to infect several patients at the home institution and the salivary glands might be considered a by-product. Furthermore, sixty per cent. of the mosquitoes were dead and could not be used when they reached their destination, a loss which is eliminated by the new method of shipping the glands.

From the purely scientific standpoint, it is much more satisfactory to ship the salivary glands, since Dr. Mayne can be sure that these are infected and will be useful in producing malaria. When the mosquitoes were shipped, there was no way of knowing whether they were infected until they had been allowed to bite the patient.

The salivary glands are put into a special medium containing blood and the whole mixture is then injected into the patient's vein. The bottles containing serum and infected glands are packed for shipment in a thermos bottle which has been chilled to just the right temperature.

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PHYSICS-ASTRONOMY

Starlight to Help Open Century of Progress

ILLUMINATION at the Century of Progress exposition in Chicago is to be turned on Saturday, May 27, by light which left the star, Arcturus, 40 years ago. Just a stunt, of course, but a good one that dramatically calls attention to achievements of both astronomy and engineering.

It was suggested by Dr. Edwin B. Frost, retired director of Yerkes Observatory, Williams Bay, Wis., who had in mind the fact that the light from Arcturus which will be used in opening this 1933 exposition left the planet in 1893, the year of the last Chicago world fair.

Allegheny Observatory in Pittsburgh, University of Illinois Observatory and Harvard College Observatory at Cambridge, Mass., will cooperate in the ceremony with instruments at Williams Bay. Starlight traveling at the rate of 186,000 miles per second will be picked up by telescopes and focused on photoelectric tubes. This light will start an infinitesimal flow of current in the tubes and this, amplified hundreds of times, will operate switches in the Century of Progress circuits to Chicago.

"While the practical value of this experiment is not great, it demonstrates vividly that our earth is receiving vast amounts of energy from the sun and from the stars," Dr. Otto Struve, director of the Yerkes Observatory, said. "The impulse of light which will be used by us corresponds to the area of the telescope objective. Every square inch of the surface of the earth receives the same amount of light from Arcturus, and if all of it could be converted into mechanical energy the result would indeed be enormous.

Science News Letter, May 20, 1933

TO PUT STARLIGHT TO WORK

Left to right—Dr. Edwin B. Frost, former director of Yerkes Observatory; Dr. C. T. Elvey, specialist in stellar photometry; and Dr. Otto Struve, present director of the Observatory. Dr. Elvey is demonstrating a vacuum tube and photoelectric devices to be used in connection with the opening of the Century of Progress.

CHEMISTRY

Chloride Ink Test Promises Great Aid to Detectives

Black Deposit of Metallic Silver Shows Spread Of Ink Chlorides Through Paper As Key to Age of Writing

THE WAY of the transgressor is hard. Especially if he tries fraudulent alteration of documents written with common pen and ink. The Austrian police will get him with a "chloride print."

Dr. Siegfried Türkel, research chemist for the police administration of Vienna, and associates, have recently revealed new chemical methods of detecting writing ink in places where it does not belong.

With the great variety of inks on the market, a forger can readily imitate the color of the writing in a will or deed, to the possible discomfiture of parties concerned. The Vienna experts observed that all writing inks contain chlorides, but in widely variant quantity. The chloride, of which common salt is a variety, slowly spreads in paper, though being colorless is invisible to the human eye. Dr. Türkel, by a simple chemical reaction, replaces the chloride in a document by metallic silver, deposited as a black image like that of a kodak print. In the same operation he bleaches out the normal ink dye. The document, photographed to yield a "chloride print," now takes on a new appearance, depending on its age: One hour old, clear black writing; one day, clear, but with broadened lines; four days, margin of pen stroke hazy; ten days, quite fuzzy; sixty days, small loops in letters filled up; six months, small writing illegible; one to two years, entirely illegible.

The tell-tale spreading of chloride is caused by the slight condensation of moisture from the air upon the paper fibers. A slow process of solution, spreading and recrystallization occurs out in a field distant from the actual pen stroke. Thus the detection must take into account the humidity of the place of storage of a document. So far it is not possible to determine an exact date of writing, but valuable relative time information is available.

The Vienna authorities have had particular trouble where the alteration in a document is very slight—for example, the change of a 6 to an 8. Microscopic methods solve this difficulty, and the chemist detectives can run a whole series of chemical analyses on one single period in a hand-written line. The tiny inkspot in question is picked to pieces, fibers and all, under the microscope, and a test is run on each inky fiber.

Handwriting experts in the United States will welcome the new method, provided tests demonstrate that the method is satisfactory for use with our inks.

The scheme, as discovered by Dr. Türkel and his associates, makes use of silver combined with the chloride in the ink. But not all inks in the United States contain chloride. However, even if it is useful only on a few inks, a successful test of this kind would be of great value, Bert C. Farrar, examiner of questioned documents for the U. S. Treasury Department, declared.

Very few ways have ever been found to test the age of ink and these have failed of confirmation in scientific experiments, he said. Any consistently successful method will be extremely valuable because of the great amount of litigation in the courts which is based on the question, when was the document written, or which document was written first.

Science News Letter, May 20, 1933

PHYSICS-MICROSCOPY

New Centrifuge Microscope Permits Double Studies

A NEW CENTRIFUGE microscope, which permits the examination of two different cells or bits of tissue simultaneously while they are being whirled to produce a force hundreds of thousands times that of gravity, has been invented by Prof. E. Newton Harvey of Princeton University. It is described in *Science*.

Prof. Harvey had already invented a similar device for the examination of a single centrifuged object. In this, the cell or tissue sample to be examined was mounted on one end of a whirling bar. As often as the bar passed a special lamp, the specimen received a flash of light, which was transmitted through a chain of reflecting prisms and lenses to an eyepiece at the center. Since the bar received a large number of flashes per second, the eye perceived the image as it does the rapidly succeeding pictures in a movie. This made possible the study of events in living material under conditions of extreme centrifugal "pull."

Now Prof. Harvey has arranged to mount a second specimen-carrying slide at the other end of the whirling bar, a little farther from the center. Each specimen receives its own flashes of illumination, either simultaneously from separate lamps, or successively from the same lamp. If the simultaneous illumination is used, the two images appear side by side in the field of the central eyepiece. If only one light is used, it is moved back and forth to permit the observer to look first at one, then at the other object.

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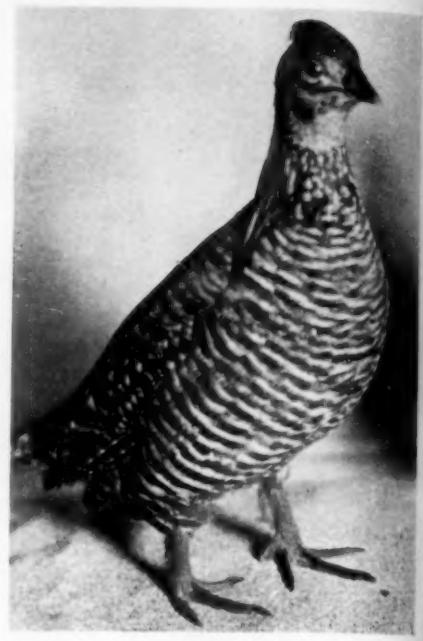

DEAD

This picture of the heath hen represents another bird species that has gone to join the passenger pigeon and the great auk. The last heath hen is believed to be dead, for the sole survivor is heard no more by residents of Martha's Vineyard Island, off the New England coast, calling in vain for its departed mate. Though never abundant in the memory of white men, there were several hundred of these birds on the island as late as 15 years ago.

ENDOCRINOLOGY

New Pituitary Hormones Discovered and Predicted

One New Substance Restores Wasted Adrenal Cortex; Possible Diabetogenic Hormone Produces Diabetes

NEW HORMONES from the pituitary gland, some just discovered and others not yet found but predicted, were described at the Congress of American Physicians and Surgeons in Washington last week.

One of these new hormones is an entirely new substance, different from any other ever obtained from the pituitary gland. It was announced by Dr. Herbert M. Evans of the Rockefeller Institute, New York City. This substance greatly increases the effect of one of the female sex hormones and apparently has a sex-stimulating effect of its own. But it is so new that Dr. Evans was not yet ready to discuss its significance.

Another new pituitary hormone apparently presides over the vitally important cortex of the adrenal glands, Dr. Evans pointed out in reviewing the work that scientists all over the world have been doing on the pituitary gland.

When the pituitary, by a very delicate operation, is removed from its protected location in the center of the head, the cortex of the adrenal gland wastes away. Without this part of the adrenal gland, or the hormone it produces, cortin, life cannot go on. A certain extract of the pituitary gland, however, restores to normal the adrenal cortex that had wasted away upon removal of the pituitary gland.

If the research of the next few months shows this pituitary extract to be distinct from all the other pituitary hormones, it will be the new adrenalotropic hormone of the pituitary, Dr. Evans predicted. The relation of this pituitary-adrenal situation to the adrenal cortical hormone essential for life is not yet clear, he added.

Another dramatic development of the anterior pituitary story is the relation between this gland and the body's use of sugar. Dr. B. A. Houssay of Buenos Aires showed that the death which usually occurs soon after the pancreas is removed can be either prevented or averted for a long time, if the pituitary gland is removed at the same time as the pancreas. The latter organ is the one that contains the insulin-producing islands of Langerhans. When this organ does not produce enough insulin, diabetes follows.

Now Dr. Evans and his associates at the University of California have found that a true diabetes can be produced in dogs merely by giving them a certain extract of the pituitary gland. This together with the work of Houssay and other scientists seems to establish the fact that there is a relation between the pituitary gland and the body's use of sugar. Dr. Evans and associates are now at work on the task of distinguishing this possible new hormone, the diabetogenic hormone, from the others of the pituitary gland.

The tendency toward the coinage of new pituitary hormones is being vigorously resisted by him and by other scientific workers, Dr. Evans declared in conclusion.

It would have been preferable, he said, to have considered many of the effects he described as shared by the two or three hormones now so well established as coming from this portion of the pituitary gland. At the present time four substances can be considered as separate hormones endowed with specific effects. These are the growth hormone, the gonadotropic or sex hormone, the lactogenic hormone and the thyreotropic hormone which has recently been shown to have a profound influence on the thyroid gland.

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REFRACTORIES

New Silicon Carbide Brick For Electric Furnaces

THE DEVELOPMENT of an improved silicon carbide refractory brick for electric furnaces was reported to the Electrochemical Society by G. S. Diamond, Buffalo, N. Y., chemist. The expansion of the new brick when heated is exceptionally low, and is only one-ninth that of the silica brick usually used. It is expected that the new refractory will find use in electric furnaces used in melting various kinds of metal, particularly those not containing iron.

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ELECTROTHERAPY

Largest X-Ray Tube Begins To Battle Against Cancer

See Front Cover

THE MIGHTIEST weapon yet to enter the war against cancer was put in operation at the Mercy Hospital Institute of Radiation Therapy of Chicago. It is a new 800,000-volt X-ray tube which, operating on a current of 1/100 of an ampere, is estimated to emit radiation equal in quantity to that from $75,000,000 worth of radium.

The giant tube is 14 feet long and is composed of two sections. It was built at Schenectady by Dr. W. D. Coolidge and his associates. The apparatus exceeds by 100,000 volts the working voltage of any other installation known to be in regular operation, the General Electric Co. says, and has a current capacity twice as great as that of any other very high voltage X-ray tube and machine.

The building in which the apparatus is installed, built specially for it, is 62 feet long, 32 feet wide, and 36 feet high. Over forty tons of lead were used in construction for protection against the cumulative effects of the X-rays upon those who are working in the laboratories constantly.

The room in which the patient is placed, under the anode end of the tube, is lined with 22 tons of lead. Through a periscopic device, the operator has the patient in full view during the treatment, and may converse with him through the same opening. Automatic safety devices throughout the installation are prominent. If the door to the patient's treatment room is accidentally opened, the X-ray is automatically cut off; it is also shut off if the door to the high-voltage room is opened or left open.

Science News Letter, May 20, 1933

ARCHAEOLOGY

Glass Eyebrows

Archaeologist Reconstructs the Story Telling How They Were Stolen off the Coffin of an Ancient Egyptian Queen

By EMILY C. DAVIS

ROBBERS stole the eyebrows off the queen's coffin.

It sounds ridiculous, perhaps. But it happened. It happened in the tomb of a queen of Egypt, Meryet-Amun. Royal coffins in Meryet-Amun's time had portrait heads on them with much inlaid jewelry-work.

Of course, the stealing of a pair of blue glass eyebrows was no great matter of importance. The same burglars removed articles of far greater value from the queen's tomb. Yet, the eyebrow incident is significant. It gives you an idea of how thorough and efficient a job the robbers of ancient Egypt did when they went down to the lonely city of the dead at Thebes to plunder a queen's burial.

Queen Meryet-Amun has come to knowledge of the modern world through the Egyptian Expedition of the Metropolitan Museum of Art. Noting an unexpected pit entrance in the royal cemetery at Thebes, the explorers dug their way into the depths of a tomb in the cliffside. That discovery was in 1929. Since then, the Museum's Egyptologists have explored and studied the tomb, and the full report of what they have found has now been published by H. E. Winlock, director of the Metropolitan Museum of Art and former leader of its Egyptian expedition.

Most of the tombs of Egypt are notable for some particular distinction. Queen Meryet-Amun's tomb will go down to fame because of its two thorough robberies, and the subsequent efforts of long-suffering government officials to patch up the damage. By remarkable scientific detective work, Mr. Winlock reconstructs these happenings in the disordered tomb

Meryet-Amun, Mr. Winlock explains, was an Egyptian who lived from about 1490 to about 1440 B. C. She was the daughter of a pharaoh, and the grandniece of that well-known feminist Queen Hatshepsut, and she looked like both her father and her great-aunt. Meryet-Amun was a small, slender person, with a fine, noble head and delicate features. When she died at about the age of fifty, her hair was brown without a trace of gray—but she did add to its effect of thickness by a mass of false braids.

This little Egyptian princess was queen of Egypt only for the last few years of her life. She rose to that highest rank, when her brother Anemhotpe II succeeded to the throne. The young heir to the throne took for his consort his middle-aged sister. Rigid Egyptian custom prescribed that the throne might be occupied only by a man who was royal and divine and it was very customary for a brother and sister of the royal line to marry.

Tomb Planning Was Exciting

The most exciting duty of the queen's brief reign, probably, was the planning of her tomb in the royal cemetery across the Nile from the capital city of Thebes. By the time Meryet-Amun came to the throne, the pharaohs and their wives had abandoned the idea of raising conspicuous pyramids. The royal family was too famous for its wealth, and the pyramids were too easily burglarized, as royalty had learned to its sorrow. The only recourse of the pharaohs was to dig tombs in the limestone canyons of the desert and to trust sand and wind to hide the entrances from Egyptian tomb racketeers.

For greater secrecy, the workmen engaged for Meryet-Amun's tomb worked after dark. Night after night, one squad excavated the corridor and burial chamber, and another squad carried baskets loaded with chips up the steps to a dump outside.

Mr. Winlock knows that they worked a night shift because of a tiny clue. This is a lamp niche at the foot of the pit steps. Outside in the starlight, the carriers needed no light to dump their debris. In the depths of the tomb, the miners had torches or lamps. But on the stairs at night, a fixed light was needed. Hence the niche.

Before the tomb was quite finished, the queen died. The pharaoh her husband and brother had her furniture and her baskets and boxes of luggage moved across the river to the tomb, and a set of magnificent coffins prepared. And doubtless official Egypt went home satisfied that everything was safe and secret.

And so it was for a while, perhaps for as long as 400 years. But when the Metropolitan Museum explorers entered the tomb, about 3,500 years after the queen's death, their eyes fell upon a scene that would have horrified Queen Meryet-Amun and King Anemhotpe.

The corridor leading to the burial chamber was strewn with baskets and broken dishes and other debris. Of the queen's beautiful furniture, all that the thieves had left were a few tiny gilded chips.

The tomb robbers, it appears, had come to their work equipped with saws and other tools for a complete haul. They had no need for the chairs and other palace furniture. Such things intact were too hard to transport and were dangerously conspicuous to sell. Instead the robbers were after the precious metals so lavishly plated over the furniture. And when the metals were stripped off, the thieves could still dispose of planks of cedar, sycamore, and tamarisk wood. So, by the light of lamps set in broken saucers, the vandals chopped with their tools in the shadowy echoing tomb, and wrecked household furnishings that were undoubtedly works of art.

Queens of Egypt were noted for their exquisite toilet articles. Whatever Meryet-Amun brought to her house of the dead to make herself beautiful was ruthlessly carried off by the burglars. They left just one of the queen's beauty aides. That was her false hair, of which she had quantities, in addition to the braids attached to her coiffure. One basket held ten small plaits. Another held three large plaits. False hair did not appeal to the tomb robbers.

Destroyed By Age

As the queen had been dead 400 years when the robbery took place, the invaders had trouble handling some of the "antiques."

Mr. Winlock writes:

"The big baskets were so many centuries old and their contents were still so heavy that every time the thieves moved one of them its bottom fell out, and baskets, lids, and bottoms must have

BARED BY THIEVES

This is the huge second coffin of Queen Meryet-Amun. Thieves stripped off the sheathing of rich gold and even stole the blue glass eyebrows off the queen's portrait.

been strewn over the antechamber."

The robbers left not one trace of gold or silver Even alabaster seems to have had its value, Mr. Winlock supposes, for only broken chips of ointment jars were left, and three of the alabaster canopic jars containing the vital organs of the mummy were missing.

The main prize on which the tomb robbers focused their attention was, of course, the nest of cases containing the queen's mummy. No less than three coffins, each shaped to resemble the human form and adorned with the queen's portrait, encased the mummy. And outside of that there was a huge, angular sarcophagus.

The coffins themselves were jewels, considering the gold that plated them and the fine inlay work. And in the heart of the nest of glittering cases, the robbers well knew they would find the queen herself decked in her loveliest ornaments.

Mr. Winlock gives a vivd description of the systematic way in which the thieves attacked these coffins:

"They chopped, sawed and broke up the sarcophagus and the third coffin because both were so bulky that that was the easiest way to get into them. They seem to have considered that some of the bigger pieces of wood were worth taking, however, for they had sawed through the corner dovetails to separate the planks without breaking them, and all the larger boards were missing. The second coffin was opened without much damage. The lid was wrenched away, but that only broke the edges opposite the tenons. Then it was methodically peeled, inside and out. The sheets of gold were ripped up, nails and all, and the linen backing of the gilded gesso was stripped off the head, the shoulders, and the column of inscription, bringing the inlays with it. The eyebrows and eyelids were pried out. They were glass and therefore remeltable, while the stone eyes themselves were left as worthless.

Damage Repaired

"The first coffin was treated in the same way, and while it had no inlays, the vulture head which was probably of solid metal was well worth removing. If there was a mask on the mummy, it was taken away bodily. The bandages were then slit with a knife down the front from crown to toes, and the inner wrappings, hardened with resin, were hacked with an adze as far as the jewelry went."

Laden with plunder, the thieves sneaked out of the royal cemetery. It is possible, Mr. Winlock says, that the damage was discovered by inspectors going the rounds. But more likely, he thinks, in a few hours the news of such robberies leaked out by gossip and rumor from house to house.

"If so," he continues, "the police or their informers would have had hints of the theft in short order, and we may take it that inspectors were at the tomb very soon after it was broken open. As the date of their inspection is fixed closely to November 25, 1048 B. C., we may place the robbery during the few days just preceding. When a preliminary investigation had fixed the seriousness of the damage done in the tomb, a party of restorers was sent there with full equipment. There was a scribe who was supplied with an official seal, there were embalmers—or bandagers at least—and there must have been workmen, who brought their own food intending to stay until they had thoroughly cleaned up the tomb. The party brought linen to rewrap the mummy, flowers to redecorate it, and offerings to lay at its feet. They brought paint and plaster and strips of glass to refinish the coffins, and they brought boxes and pots for their materials."

These government employees swept up the rubbish in the disordered tomb and piled it in the corridor and the antechamber. Among the old rubbish they threw the ragged bandages that had wrapped the queen's mummy originally and that bore the evidence of her identity in hieroglyphic writing.

Then the restorers went to work on the two inner coffins and the mummy. Examining the evidences of their work, Mr. Winlock reports that they brought fine linen sheets from government stores, but, strange to say, some of the linens had been used and laundered.

Mr. Winlock proves this by pointing to the ink markings on the linen. Such labels as "Temple of Amun" were written in ink brown and faded from the laundry. When the mummy of the queen was re-wrapped, the scribe of the party wrote the official date and record on the outer linen wrapping. This ink, in contrast to the laundered writing, is a brilliant, bluish black.

The official docket on the mummy gave the date, corresponding to about November 25, 1048 B. C., in our calendar, and the added note: "This day the inspection of the King's Wife, Meryet-Amun."

The restorers probably wound up their task in a day. No gold and jewels were replaced. The workmen painted a sign over the wood, disregarding the original decorations. On the inner coffin, they painted the queen's hair blue, and her face yellow. For eyebrows, ill-fitting pieces of blue glass were hastily set in plaster.

Before the paint on the coffins was dry, the workmen had to move them, and in the process the paint was badly smeared. Both coffins became liberally spotted with sweaty hand prints.

When the queen's mummy was once more inside the two fairly neat but no longer regal coffins, the restoration party laid floral offerings and three saucers with other offerings on the floor. They then gathered up their tools and sealed the place.

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OCEANOGRAPHY

Laboratory Ship Makes Study of Gulf Stream

WITH SOME four hundred new species of marine animals in her hold, the laboratory ship *Atlantis,* Dr. Albert Parr in charge, has returned after a long cruise in southern waters. Her course took her on a wide sweep into the Atlantic, from the Bahamas through Anegada Passage past the West Indies, into the Caribbean Sea, west to Cuba and up Florida Straits.

The scientists have established definitely for the first time the exact flow of the Gulf Stream in the Caribbean. They state that the Gulf Stream is not merely a current flowing from the Gulf of Mexico past Florida, across the Atlantic to the British Isles and the northern seas, but that it is a vast current that after sweeping to Spitsbergen circles back through the North Sea to the West African coast, where trade winds and equatorial currents turn it westward to the Caribbean and at last to the Gulf of Mexico again, completing its circuit.

In checking up the currents that constitute the Gulf Stream, the scientists concluded that the Bahamas Flow, long regarded as part of the Gulf Stream, is not connected with it but is a separate dynamic current.

Science News Letter, May 20, 1933

ENGINEERING

Accelerator-Brake Pedal To Reduce Auto Accidents

A COMBINING of automobile accelerator and brake pedals into one control upon which the foot can be kept constantly while driving has been invented by Commissioner General of Immigration Harry E. Hull. He urges its use as a safety measure which will reduce the accident rate and result in the saving of many lives.

In a mechanism that Commissioner Hull has developed, the accelerator pedal is so combined with the brake pedal that when the brake is pressed with the foot the accelerator automatically disengages. For an emergency stop there is no need of moving the foot from accelerator to brake and there is no chance of "stepping on the gas" instead of the brake as sometimes happens with today's conventional cars.

New automobiles could be equipped with the new accelerator-brake pedal control at practically no additional cost while old cars could be converted to the new safety device at little cost, Commissioner Hull states.

National Bureau of Standards tests made on the Hull device showed that "the decrease in reaction time is great enough to justify consideration for its adaptation to motor vehicles generally." The time of applying the brake was reduced more for those persons who have slow reaction time when using standard equipment than it is for the faster individuals and thus the device helps most those naturally slow in putting on the brake. The effect of the device is equivalent to increasing the braking ability of the car.

The Bureau of Standards engineers observe that since other studies show that the capacity of a highway is dependent upon the average reaction time of the drivers in a stream of traffic, the universal use of accelerators attached to brake pedals would allow more autos to be carried on a road in a given time.

Science News Letter, May 20, 1933

PSYCHOLOGY

You May Worry More Than You Think You Do

AN INDIVIDUAL is not a good judge of the extent of his own anxiety. You may be so worried as to be seriously affected physically by the emotional disturbance, but be unaware that you are so affected. Or, on the other hand, you may feel terribly wrought up over some problem while impersonal tests reveal no physical disturbance.

These conclusions were based on tests of the rates at which these individuals expended energy while resting without food, under ordinary conditions and then under stress of emotion. They were reported to the Association of Consulting Psychologists by Dr. Charles W. Manzer, of New York University.

Emotions increase the rate sometimes as much as 46 per cent., Dr. Manzer found. Both pleasant and unpleasant emotions affect it in the same way.

Some worries, however, do not affect this metabolic rate, and these seem to be those which are not concerned with the individual so directly. A girl who said she was anxious about her father's success in a business venture showed no change in basal metabolic rate. Contrasted with this record, another who was self-conscious over wearing of new clothes did show such a change.

Science News Letter, May 20, 1933

IN SCIE

ENTOMOLOGY

Latest War News From Fight Against Insects

LATEST BULLETINS in man's war on the insects received at the U. S. Department of Agriculture:

Grasshopper eggs lived through the winter with great success in North Dakota and Wyoming, indicating heavy attacks by hungry insects later.

Army cutworms attacked tomatoes and Irish potatoes in southern Mississippi, while at the height of a similar outbreak in Kansas 90 worms were concentrated on a single square foot of ground.

Common red spider in a North Carolina district so effectively damaged the strawberry crop that none was harvested.

The most notable outbreak of southern pine beetle since that of 1893 occurred in southern Pennsylvania, western Maryland and northern Virginia.

Science News Letter, May 20, 1933

MEDICINE

Gelatin Diet Teaches About Bright's Disease

A GELATIN diet has given physicians new knowledge about a certain type of Bright's disease. Results of feeding gelatin to patients suffering from this condition were reported by Dr. G. Philip Grabfield of Boston to the American Society for Clinical Investigation meeting in Washington.

The gelatin diet was used because gelatin is one of the protein foods that does not contain sulfur. Dr. Grabfield was investigating the fact that patients suffering from this particular form of kidney disease tend to hold onto the sulfur in the diet even more than to the nitrogen.

Patients who get swollen ankles and legs, known as edema, fail to excrete sulfur as well as nitrogen, while patients suffering from the same disease but without the swelling or edema fail to excrete nitrogen alone, the gelatin diet experiment showed.

Science News Letter, May 20, 1933

EE FIELDS

SEISMOLOGY

Earthquakes Thick Around Central America

EARTHQUAKES during the past year have tended to cluster thick around Central America, with relatively few on the opposite side of the Pacific Ocean, Prof. Joseph Lynch, S. J., of Fordham University, said in a review of seismic activities during the twelve months, May, 1932, to April, 1933, given before the American Geophysical Union.

The total earthquake epicenters determined by the cooperative arrangement between the U. S. Coast and Geodetic Survey, the Jesuit Seismological Association, and Science Service was 50, about an average figure for a year, Prof. Lynch said. Of these, 41 were in the northern hemisphere and only nine in the southern, an unusually lopsided distribution. And those in the northern hemisphere tended to group themselves most thickly in Central America and southern Mexico, and off the Pacific coast of that region.

During the past year about 2,300 persons lost their lives in earthquakes. Of these, 1,500 deaths occurred in Japan, 350 in Greece, 280 in China, 130 in California and the rest mainly in Mexico.

Science News Letter, May 20, 1933

FORESTRY

Great Tree Gardens To Aid Reforestation

GARDENS of trees, or arboreta, such as are common in the Old World and are becoming more frequent in the New, will be of great usefulness in the work of rebuilding America's forests, as well as in the development of ornamental and orchard plantings. In addition, they have high value in themselves, as places of public instruction and recreation. These and other advantages of arboreta were developed in an address by Prof. Rodney H. True of the University of Pennsylvania, director of the University's new Morris Arboretum.

Although there is a considerable appeal in the idea of replacing our lost forests with new ones made up of native species only, this proposal is not necessarily the most practical or promising of profit. Prof. True called attention to the sad fate of the native American chestnut, now nearly wiped out by the blight disease. He mentioned also the white pines, which are having the fight of their lives with blister rust. It may be best to replace native trees with resistant species from abroad, in some instances at least; and it is in the course of selecting and acclimating these desirable immigrants that a "garden of trees" or arboretum can repay many times over the money and scientific labor invested in it.

Among the arboreta of this country the newest is the Morris Arboretum, of which Prof. True is director. This was originally a large private estate near Philadelphia, on which its owners planted thousands of rare trees.

Science News Letter, May 20, 1933

AGRICULTURE

Winter Wheat Reduced More Than One-Fourth

WINTER WHEAT in the United States will be a short crop this year, according to the U. S. Crop Report for May, just issued. The estimated yield will be 337,485,000 bushels, as compared with 464,151,000 bushels in 1932, and a yearly average of 539,436,000 for the five-year period 1926-1930. This represents a decrease of 27 per cent. from the 1932 figure, and of 43 per cent. from the five-year average.

This is due partly to a decrease in total acreage and partly to a decline in yield per acre. This year's crop will come from 27,096,000 acres, as compared with 33,656,000 acres in 1932 and 28,560,000 acres for the 1926-1930 period. The yield per acre is expected to be 12.5 bushels, as against 13 7 for 1932 and 14.7 for the five-year average.

Figures for spring wheat are still fragmentary, because the wet spring has interfered with sowing. The spring wheat crop may also be below average in both acreage and per-acre yield. Foreign winter wheat acreage in 24 northern hemisphere countries is reported as slightly below last year's sowings, though a little above the 1931 figures. However, inasmuch as Russian wheat plantings are still largely an uncertain quantity, nothing very definite can be forecast about foreign wheat production.

Science News Letter, May 20, 1933

ENGINEERING

Speed of A. C. Motors Varied With Vacuum Tube

PROMISING to banish direct current generators and motors now used widely where variable speeds are required, a new kind of electric motor using alternating current was introduced to engineers by its inventor, Dr. E. F. W. Alexanderson, General Electric consulting engineer.

It is synchronous, has no commutator, and operates efficiently at variable speeds by means of a new type of vacuum tube control.

Power was fed into a bank of thyratron vacuum tubes directly from a 4000-volt line, and the tubes varied, as directed, the constant frequency of the incoming power. Thus the speed of the motor, which in an alternating current machine depends on the frequency of the power supply, was controlled.

Efficiency between power line and motor shaft of the new motor and thyratron control was said to be 98½ per cent. while corresponding installations of the present type are only about 90 per cent. efficient.

Among the first applications to be made will be those in ships in which steam turbines will run at full tilt while the captain slows down the propellers by changing the current frequency with controls on the bridge.

Science News Letter, May 20, 1933

ZOOLOGY

Pigmy Chimpanzee Species Discovered in Africa

PIGMY chimpanzees, constituting an animal race entirely new to science, were described before the meeting of the American Society of Mammalogists at Cambridge, Mass., by Harold J. Coolidge, Jr, of the Museum of Comparative Anatomy, Harvard University.

The species, known zoologically as *Pan paniscus* is found south of the Congo River in Africa. It is the smallest chimpanzee in the world, and is characterized by small teeth, close-set eyes, small, almost covered ears and narrow back and shoulders. It resembles the ordinary chimpanzee baby, and is in general the most primitive of its kind. It is exceedingly precocious and has a most peculiar call and cry.

This country's only specimen is in the American Museum of Natural History.

Science News Letter, May 20, 1933

PHYSICS—ASTRONOMY

Roëmer Proves Velocity of Light "A Classic of Science"

An Ancient Controversy Settled and a Prediction Fulfilled by Comparing Theory with Many Observations

HISTOIRE DE L'ACADEMIE ROYALE DES SCIENCES. Tome I. Depuis son etablissement an 1666 *jusqu'a* 1699. *A Paris: MDCCXXXIII. Mathematique: Astronomie,* 1676.

HISTORY OF THE ROYAL ACADEMY OF SCIENCES. Vol. I. From its establishment in 1666 *to* 1699. *Paris:* 1733. *Mathematics: Astronomy,* 1676. *This is a literal translation of an extract from the original publication. Translated for the Science News Letter by Helen M. Davis.*

SINCE the satellites of Jupiter are extremely important, on account of the number of their eclipses, which usually amount to more than 1300 a year, M. Cassini, who is more learned than all others in the news of that world, this year notified all the astronomers of Europe that the following year, at the end of March, the system of the satellites would reverse itself; that is to say, that their superior semi-circles, which for six years have been turned to the south, would turn to the north. Thereby the hypothesis established by Galileo, the first observer of the satellites, and the calculations of those who have followed him, would be entirely destroyed.

Some other errors, where they have recurred, have already made whole hours and sometimes even days of difference to be found between their predictions and that which happens in the heavens of Jupiter, also M. Cassini no longer hesitates to declare that he retracts a certain motion which he put into his hypothesis out of a sort of deference and respect for the observations of Galileo. It is impossible that even the greatest genius should in such matters succeed to absolute precision or perfection, when he has the misfortune to be the first to work there. The glory of the discovery is counterbalanced by the mistakes attendant upon lack of experience. Anything founded upon a small number of celestial observations always contains some hidden error which does not show itself until it has accumulated with time, a third part becomes sensible only when it has become a second or a minute; and thence it extends to an infinity of other sorts of errors, which demand an ever greater mass of observations, in proportion as they are the more delicate.

It will be only through a great mass of observations that one begins to perceive a truth of Physics, ignored up to the present time by all Philosophers, and so ignored that the contrary is almost a constant principle.

The revolutions of the first satellite of Jupiter have been calculated very exactly, and a very great number of times; and consequently all its eclipses caused by the shadow of Jupiter, yet it always happens that at certain times it comes out of the shadow several minutes too late, and at other times earlier than it ought, and no one has yet recognized the principle of this variation. In comparing these times one with the other, M. Roëmer saw that the Satellite came out of the shadow later exactly when the earth by its annual movement drew away from Jupiter, and earlier when it approached it. From that, M. Roëmer began to form this ingenious conjecture; That light must take some time to diffuse Granted this, if the Satellite comes out later from the shadow when we are farther away from it, this does not mean that it actually comes out later; but the light takes more time to reach us, because, so to speak, we have been ahead of it. On the other hand, when we are going toward it, the sojourn of the Satellite in the shadow seems shorter to us.

To prove the truth of this idea, he calculated what difference in coming out of the shadow or Emersions of the Satellite, correspond to different elongations of the Earth, and he found that the light would be retarded 11′ for a difference of elongation equal to the distance of the Earth to the Sun. Upon this basis, he announced to the Academy at the beginning of September, that if his supposition were correct, an Emersion of the first Satellite which was due to arrive the 16th of the following November, would arrive 10′ later than it would be due to arrive by the ordinary calculation.

JUPITER'S FOUR SATELLITES

Discovered by Galileo in 1610 had been observed for only a little more than half a century when Roemer calculated the speed of light from the periodic variation between the theoretical and observed motions of one of them. Their positions were long observed with the idea that they would solve the pressing problem of determining longitude at sea, but this hope was not realized. These satellites can be seen by anyone with an ordinary field glass. Jupiter's other five moons, discovered since 1897, are reserved for astronomers with modern high-power telescopes.

The event corresponded to the prediction of M. Roëmer. In spite of this success, as the idea was so new, it was still not acknowledged; they were on guard against the charms of novelty. The Satellite did not have exactly for its center of motion, the center of Jupiter. Moreover, it is certain that its revolutions have more speed when Jupiter is nearer the Sun, and all this ought to produce in its movement some inequalities. But these inequalities would not by any means have been precisely regular like those in question. One even imagined another Astronomical hypothesis which would adjust everything; but this would be too different from everything which is recognized elsewhere in the Heavens. By calculation it could well satisfy all the Observations; but it would not have a certain semblance to truth which satisfies the mind.

Yet it was necessary to admit the Retardation of Light, seemingly so truthful according to Physics, even if it was not proved by Astronomy. Why could Light traverse space in an instant, any more than sound, or to speak still more philosophically, any more than a block

of marble? For the motion of the most subtile body can only be quicker; it cannot be instantaneous, any more than that of the heaviest and most massive bodies. A prejudice too favorable to the Heavens and their celestial bodies has in fact given them prerogatives which they are beginning to lose. The Heavens have been thought incapable of change and alteration; we have recently been disabused of that by experience; but if we are logical, there ought to be now of all times a great prejudice against alterations and change of sublunary bodies. The same Laws of Nature hold throughout everything, and the Heavens should in no wise be privileged. The motion of a block of marble proves the necessity of some duration for that of light. The motion of sound which travels so quickly is in effect, compared to that of light, only the motion of a block of marble raised without much difficulty by a crane.

It follows from Observations by M. Roëmer, that light in one second of time travels 48203 common French leagues, and $\frac{8}{1000}$ parts of a league, a fraction which might well be neglected. Sound in the same times travels only 180 toises, that is to say, a part of one league more than four times smaller than the fraction $\frac{8}{1000}$, which is negligible in the motion of light. If we compute from that the path which it [light] travels in one minute, and that which it must travel to be retarded ten minutes to our perception, we will be frightened, alike at the immensity of space, and at the swiftness of light, and at the subtilty proportional to this swiftness, and at human understanding.

Science News Letter, May 20, 1933

ASTRONOMY

Mt. Locke Selected For Second Largest Telescope

THE SECOND largest telescope in the world will be located on Mt. Locke, the 6,790 foot peak in the Davis Mountains of southwestern Texas, which has just been selected as the site of the new McDonald Observatory, a cooperative enterprise between the University of Texas and the University of Chicago.

A bequest by the late W. J. McDonald of Paris, Texas, to the University of Texas will provide the eighty-inch telescope and buildings, while the University of Chicago will provide a staff under the direction of Dr. Otto Struve, director of the Yerkes Observatory.

Science News Letter, May 20, 1933

TEXTILES

Moth Repellent Dye Being Sought For Clothes

THE RAVAGES of clothes moths amount to about $100,000,000 a year in this country. Some six hundred moth-proofing materials have been patented, not including fumigants Thus the clothes moth, seldom seen and preferring dark places, may well be listed as a "public enemy" and put on the spot if we can.

The latest idea in protection against moths is the development of a dye for wool that makes clothes as distasteful to moths as they are beautiful to human eyes.

At the University of Illinois under the direction of Dr. L. R. Shriner, this problem is being tackled by a Textile Foundation fellow, H. E Ritchey.

At present only one dye on the market is moth repellent, preliminary tests show. This was of course accidental. Mr. Ritchey is now at work to determine whether moth repellents will retain properties when combined with dyes. If they do, whether the anti-moth material will interfere with the coloring by the dyes must then be investigated.

He believes that there is a good chance of developing an ideal moth-proofing material in the form of a moth-repellent dyestuff. The ideal material would first be effective, have no objectionable odor, should adhere evenly to the fabric treated, be unrecognizable on the material, not dust off, not be toxic to humans, and be reasonably priced.

"Some of the multitude of patented mothproofs are ineffective, but the chief loophole for moth attacks probably lies in defective conditions of application," said Mr. Ritchey in discussing the need of better moth protecting. "Sprays, for instance, are not applied thoroughly, or fumigants are allowed to escape through lack of air-tight chests or wardrobes. The habits of moths are their greatest protection. They prefer dark places and are seldom seen in the light. The moth that seeks the bright lights and incites the housewife to frantic efforts is usually a harmless variety. His destructive brother works under cover and frequently goes undetected until the damage is discovered.

"Some of the most commonly used substances are paradichlorobenzene, naphthalene, carbon bisulfide and carbon tetrachloride. Of the many materials, some seek to kill the moth, others endeavor to nauseate him and thus divert his presence or his appetite. Some methods probably only lighten the moth's daily routine.

"The great number of 'proofs' attests to the serious need for protection against moth ravages, and would seem to assure adequate defense. In actual practice, however, few of the materials prove entirely satisfactory. Some are inflammable, others poisonous to humans, some malodorous, others difficult to apply, and still others are unsatisfactory because of their expensiveness."

Science News Letter, May 20, 1933

ETHNOLOGY

Indians Branded Selves With Bonfires

STOIC INDIANS of the West branded designs on their skin by literally lighting small bonfires on themselves, it appears from new information about ancient practices obtained from living Indians.

Mission Indians of California used both branding and tattooing to adorn their bodies, J. P. Harrington of the Bureau of American Ethnology has learned. For the branding, the Indians took leaves of California mugwort which were dry and shriveled in early summer. These dried leaves were pounded on an anvil stone to make a spongy fuzzlike material. The stuff was then laid out on the bare skin of the Indian to form the desired pattern and the dried leaves were lighted.

"The pain was intense as the burning reached the skin," writes Mr. Harrington in a report of Smithsonian Institution explorations, "but it was borne without a wince or murmur. The brand resembled a cattle brand and adorned the person for life."

Mission Indians tattooed themselves by pricking a pattern with a cactus or other thorn, or a bit of sharp flint, and then rubbing a bluish-black dye, made of black nightshade, into the bleeding wound.

Science News Letter, May 20, 1933

MEDICINE

Shrinking From Rare Disease, Sailor Gives Self For Science

CAPT. CHARLES MARTELL grew twelve inches shorter. He twice broke an arm by merely rolling over carelessly in bed.

Now Capt. Martell, who fought his rare disease as he would pilot a disabled ship through a stormy sea, is dead. But the courage of this sea captain who insisted upon four operations, not so much to save him as to add to medical knowledge, is written in medical history.

The story was told to the American Society of Clinical Investigation meeting in Washington by Dr. Walter Bauer of Massachusetts General Hospital, Boston, who had Capt. Martell's cooperation in studying his puzzling case, diagnosed in a last operation just before his death as the first mediastinal tumor ever found.

Capt. Martell's rare malady was a tumor of the parathyroid glands. This caused his bones to shrink and shorten to such an extent that he lost a full foot in stature. His bones also became so brittle that a small stress upon them caused them to break.

Eight times the doctors operated. The last four times they operated at the insistence of Capt. Martell. He wanted to know what was the matter. He wanted medical science to know in order that others might be saved. The eighth time the tumor was found and removed. It was too late to save his life for his kidneys had become involved.

Knowing he was doomed, Capt. Martell gave strict instructions for an autopsy that would complete the medical record of his case.

Medicine has now a classical description of his rare malady, and other victims may thank Capt. Martell and his medical collaborators for knowledge that may save their lives.

Science News Letter, May 20, 1933

BOTANY-LINGUISTICS

Famous Biblical Names Based on Names of Plants

SOME OF THE best-known and most melodious names in the Bible, as well as in the Talmudic literature of the Jews, are based on flowers and other natural objects, and often reflect a fine blending of poetic appreciation of nature and the strong religious sense of the race. So declares Dr. Ephraim Ha-Reubeni, botanist at the Hebrew University in Jerulasem, who has for many years made a special study of the ethnobotany of Palestine and the neighboring regions.

Some of the earlier students of person-names in Hebrew, says Dr. Ha-Reubeni, have been led astray by sticking too closely to the original root forms of the names, even when these are obviously inappropriate. He holds that it is much more likely that a parent would name a child for an attractive animal or pleasant plant than for a mere grammatical quality. Thus the name Mary, or Miriam, has been held to be a derivative of the Hebrew word meaning bitter, or by others from a phrase meaning a drop from the sea. But Dr. Ha-Reubeni states that the name really comes from a plant of the sage family, native to Palestine, which has an odor resembling that of myrrh.

A less known feminine name, Hassenouah (Chron. 9:7), has been interpreted as meaning "hated." This derivation Dr. Ha-Reubeni thinks palpably wrong; he holds that the name is taken from "sneh," a thornbush.

One of Easu's sons was called Korah, and the same name was borne by the leader of a rebellion against Moses in the desert. This name has been interpreted as meaning "baldness." But baldness was a target for ridicule among the Children of Israel as it has always been elsewhere: witness the bad boys who teased Elisha because of his shining pate. For this reason Dr. Ha-Reubeni thinks that the name Korah was more probably derived from the "bald" or rayless flowers of the golden chamomile plant common in Palestine.

With all their overpowering awe of the names of God, "El" and "Yah," the ancient Jews did not hesitate to combine with them the names of natural objects, especially of plants, to make names for persons. Thus we have Mishael, from "maish," the service-tree; Mahalalel, from "mahalal," a species of oak; Havazinia, from "havazelet," a group of flowers; and Perachyah, from "perach," a flower. Such combinations Dr. Ha-Reubeni takes as an indication that his forefathers did not despise material things as contrasted with things of the spirit, but considered them to be themselves manifestations of the power and goodness of their God.

Science News Letter, May 20, 1933

The mummy of King Tutankhamen was directly accompanied by about 150 articles, such as jewelry, daggers, and royal and religious insignia.

A new iron alloy for making pumps, valves, and other chemical-handling equipment, is said to be practically unaffected by the action of hydrochloric acid at all temperatures and concentrations.

As recently as the seventeenth century, people in Europe seriously believed that unexplored parts of the earth contained curious inhabitants, such as people who had no mouths and nourished themselves by smelling fruits and flowers.

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ARCHAEOLOGY

Blonde Girl Explorer Mystifies Natives of "Forbidden City"

By EMMA REH

WHEN AN American woman hunts Indian ruins in obscure by-ways of Oaxaca State, Mexico, the astonished natives are likely to take her for an angel or a devil.

In the market square in Tlaxiaco, where on Saturdays Indians gather from a wide radius, I have learned what Indians of Achiutla thought, when I visited their town recently seeking ancient and "forbidden" ruins nearby.

Some of the Indians passed along the word that I was an engineer-ess with a compass that would attract treasure. I had only to walk among the ruins to locate the treasure.

Another version was that I lured people off alone to cut their throats. My informant is an Indian from another town, who has picked up the gossip from Achiutla. He illustrated my murderous custom with a swipe of the hand across his neck and a snappy click of the tongue. I realize now that Achiutla thought I was the devil.

It is nicer to remember another Mixtec Indian, the priest in the town of Teposcolula. As I stood before an altar in his church, he looked at me and then at the images and said:

"Yes, your eyes are like those of the Child Jesus."

The Indian who reported that I was supposed to be a cut-throat, did not himself believe that my power was all evil. To prove his faith that I had friendly magic, he asked me for a liquid which would "chill" the brain of his child, so that the child would know how to read. I said there was no such substance.

"Oh, yes," he said, "it is the stuff your countrymen use for softening their brains."

When I tried to visit the ruins near Achiutla, I was allowed to see them only from a distance, though federal authorities had given permission. The 95-year-old "boss" of the town and the town council apparently feared that I would spot the supposedly lost treasure of the King Yandushi.

Now, as I return north toward Mexico City, Achiutla has been urging me to go out of the way to visit the remote town again. The son of the old chief urged it, saying "all is changed."

Recently the chief's grandson killed a man and the family has lost prestige in Achiutla. Perhaps they think now that the blonde stranger can help them find the treasure or the gold mine of King Yandushi, so that the grandson's release can be speeded.

I may go to Achiutla. No one has seen those guarded ruins, and Achiutla corresponds to Chichen Itza and Teotihuacan, as an important site.

Science News Letter, May 20, 1933

ELECTROTHERAPY

Electricity Restores Heart Beat After Sewing Up of Wound

A MAN whose heart has ceased its normal rhythmic activity as a result of an accident, and which has gone into a state of twitching in which it circulates no blood, may be recovered by a strong electrical counter shock, according to a report received by Dr. William B. Kouwenhoven, professor of electrical engineering at the Johns Hopkins University, from a surgeon whose name has not yet been revealed.

Applied Successfully

The discovery that such an electrical counter-shock will bring the heart to rest, but will permit the restoration of the organ to its normal functioning when the circuit is broken, was originally made at Johns Hopkins University by Dr. Kouwenhoven and Dr. Donald R. Hooker, of the School of Hygiene, and Dr. Orthello R. Langworthy, associate professor of neurology.

The discovery has now been applied successfully in the treatment of patients. The surgeon reporting wrote that he has been able to set the heart working uniformly after such delicate operations as the sewing up of a knife wound in the heart. The necessary electrical apparatus has been installed over the operating table, he said.

Animals' hearts, subjected in recent experiments to a shock of about one-tenth ampere, alternating current, have been recovered by sending a strong electrical counter-shock, about seven-tenths of an ampere A. C., through that organ, Dr. Kouwenhoven said. Explaining the reaction, he remarked that the shock from ordinary house voltage is sufficient to cause the heart muscles to act as individual units, and not as the customary unified group working rhythmically. This, in turn, causes the cutting off of the necessary blood supply to the brain.

Stops and Starts Again

When the strong shock is applied, it has been found, the heart does not go into the twitching action, the independent movement of each muscle, as it does when the smaller shock is sent into the body, but is stopped completely and is returned to normal functioning when the circuit is broken. This experiment has been repeated successfully many times.

Science News Letter, May 20, 1933

The French dictionary "Le Petit Larousse" published in Braille type for the blind consists of 20 volumes, each twice the size of the whole work in ordinary print.

RADIO

POISON IVY AND POISON SUMAC

by

L. E. Warren

Food and Drug Administration, United States Department of Agriculture

Friday, May 26, at 1:45 p.m. Eastern Standard Time over stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service

ANATOMY

Heavy Brain of Baby Gorilla Is Surprise to Scientists

WHAT APPEARS to be in many respects the "best" animal brain ever studied has recently been given an exhaustive examination by Dr. C. J. Connolly, of the psychology department of the Catholic University of America in Washington.

The brain studied by Dr. Connolly is that of a three-year-old mountain gorilla, which died in the National Zoological Park a few months ago. It was turned over to the Catholic University psychologist because he has made a specialty of comparative cerebral anatomy.

The brain of this gorilla, who weighed only 40 pounds at his prime, was larger than the brains of many adult gorillas which have been studied, and indeed is one of the largest great-ape brains on record, in spite of its late owner's extreme youth. It is the first brain of a mountain gorilla ever studied in detail; all other gorilla brains which have been examined were those of the coast gorilla subspecies.

The baby gorilla's brain weighed 466.6 grams, a little over a pound. The average weight of the brains of six adult female coast gorillas reported by Dr. Connolly was 379.3 grams, about three-quarters of a pound. The average brain weight of three young male coast gorillas, comparable in age to this young mountain specimen, was only 318.3 grams.

If the gorilla's brain grows at the same rate as that of a human being, this baby mountain gorilla, had he lived, would eventually have had a brain weighing more than 600 grams. The lightest normal human brain weighs about 1,100 grams. If the assumption of an eventual 600-gram adult brain-weight for the male mountain gorilla is correct, this represents substantially more than half the human brain-weight; and hitherto apes have been allowed less than half. The mountain gorilla may therefore set a new record.

However, Dr. Connolly points out that this estimate may be upset by other factors; it is even possible, he says, that the little three-year-old gorilla may have had as heavy a brain as he would ever have possessed had he lived.

The baby gorilla's brain is described as "typically anthropoid." The cerebellum, which is concerned with balance and muscular coordination in general, is relatively massive, as in all ape brains. The cerebrum, where the higher sense organs have their centers, and which seems to be the seat of consciousness and thinking, has a relatively high development, distinctly in advance of the coast gorilla brains examined. Dr. Connolly found a rich pattern of convolutions, especially in the frontal lobe, which some authorities believe most closely associated with intelligence.

In spite of his seemingly exceptional brain, however, the little gorilla was in life no ape genius. His movements were deliberate, and even clumsy. He always seemed, said Director William Mann of the National Zoological Park, "just a normal gorilla."

Science News Letter, May 20, 1933

MEDICINE

High Blood Pressure Runs in Families

HIGH BLOOD pressure, known to physicians as hypertension, runs in families, it appears from a study of statistics reported by Dr. William Allan of Charlotte, N. C., at the Congress of American Physicians and Surgeons.

In one series of cases, both parents of patients having high blood pressure also suffered from the condition. In 349 out of 480 cases, one of the patient's parents were sufferers.

In 121 families with both parents having high blood pressure more than three-fourths of the children suffered from it also In 216 families with one parent having this condition, over two-thirds of the children also had it.

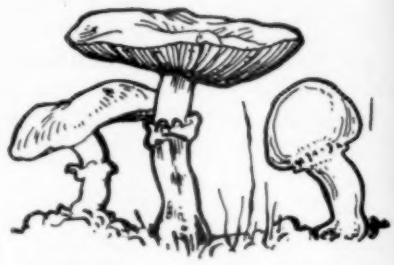
In 349 families, three-fifths of the brothers and sisters of high blood pressure patients were found also to have the condition.

Science News Letter, May 20, 1933

An explorer reports that, because head hunting is so prevalent among Jivaro Indians of South America, women greatly outnumber the men, and a Jivaro man may have as many as twelve wives.

NATURE RAMBLINGS by Frank Thone

BOTANY



Few Mushrooms Are Poisonous

UNDOUBTEDLY many of us deprive ourselves of many gustatory pleasures we might have, if we were not so timid of wild mushrooms. For after all, few of them are dangerous.

Only one common genus is really deadly, the Amanitas, and they are easy to identify. Look carefully at the stalk of any *white-gilled* mushroom you find growing in the woods, or on cut-over land If it has a cup about the base and a loose ring about half-way up, then it is a member of this dangerous tribe, and should be let alone. If it has only the cup, or only the ring, it is not an Amanita. But better examine a number of specimens, to make sure.

The color of the top of the cap means nothing. Amanitas may be white, red or green on top; but so may other mushrooms that are quite good to eat. But there is one additional sign of the Amanita that you can find on the top: this genus frequently has loose white scales or scabs lying on its cap. But their absence should not be taken as final, for they may be washed off by a heavy rain.

The widely-used distinction between "mushrooms" and "toadstools", according as fungi are known to be good or suspected to be poisonous, has no real meaning. Both names are merely designations for this particular shape of fungus growth—an umbrella-shaped or rounded cap on top of a stalk. A mushroom is a toadstool and a toadstool is a mushroom.

Furthermore, there is no rule-of-thumb test for detecting poisonousness in mushrooms—the silver-spoon trick, the peeling of the cap, changing color in hot water: none of these is of any value whatsoever.

Science News Letter, May 20, 1933

First Glances at New Books

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Aviation

THE AIRCRAFT YEARBOOK FOR 1933—Aeronautical Chamber of Commerce of America—*Van Nostrand,* 506 p., $6. A comprehensive annual survey of aviation progress now in its fifteenth volume. There is a chronology for the year, a compilation of flying facts and figures, seventeen chapters under the general title "The Year in the Air," and three chapters on "Manufacturing and Engineering Progress."

Science News Letter, May 20, 1933

Medicine

AMERICAN RED CROSS FIRST AID TEXT-BOOK—Harold F. Enlows—*Blakiston's,* 237 p., $1 cloth, 60c paper. The First Aid Service of the American Red Cross, under the direction of Mr. Enlows, has brought up-to-date its valuable text, which was first written by Col. Charles Lynch, Medical Corps, U.S.A., Retired. The edition is featured by many excellent illustrations that will greatly aid in understanding the directions for various procedures.

Science News Letter, May 20, 1933

Engineering

BUILDING SCIENCE—F. L. Barrow—*Longmans,* 235 p., $1.75. A textbook of British origin intended for students of structural materials in engineering colleges.

Science News Letter, May 20, 1933

Nonsense

SO THIS IS SCIENCE—H. F. Ellis—*Dutton,* 109 p., $1.75. A straight-faced Englishman takes popular science for a bit of a ride His technique involves large use of puns and near-malapropisms. Example: "The Stratosphere: Said to be full of balloons hoist with their own Piccard." Illustrations are by Arthur Watt.

Science News Letter, May 20, 1933

Medicine

ALLERGY AND IMMUNITY IN OPHTHALMOLOGY—Alan C. Woods—*Johns Hopkins Press,* 176 p., $2.25. Foreworded by Dr. William H. Wilmer. This first monograph from the Wilmer Ophthalmological Institute of the Johns Hopkins Hospital and University is said to be the first book published on the subject since 1914. The book will be very helpful to physicians. While the subjects of resistance to disease and idiosyncrasy or hypersensitiveness to proteins, of which hayfever is a common example, are of considerable popular interest, the book is, of course, too technical for lay reading, being written primarily for the physician specializing in diseases of the eyes.

Science News Letter, May 20, 1933

Physics

HEAT—James M. Cork—*John Wiley,* 279 p., $3. A comprehensive treatment of heat which includes the newer material which resulted from Planck's introduction of the idea of the quantum and also contains the older classical development of the subject.

Science News Letter, May 20, 1933

Astronomy-Geology-Oceanography

THE EARTH, THE SEAS AND THE HEAVENS — *Encyclopaedia Britannica,* 236 p., $3. By reprinting a selection of articles from the Encyclopaedia Brittanica, an attractive volume useful for reference or reading has resulted.

Science News Letter, May 20, 1933

REPORT OF A RESEARCH INTO THE ATTITUDES AND HABITS OF RADIO LISTENERS—Clifford Kirkpatrick—*Webb Book Publishing Co.,* 63 p., $1.50.

Science News Letter, May 20, 1933

Physics-Electricity

THEORY OF THERMIONIC VACUUM TUBES—E. Leon Chaffee—*McGraw-Hill,* 652 p., $6. A comprehensive theoretical treatment of the fundamentals of thermionic emission and of the vacuum tube, written by the professor of physics at Harvard University.

Science News Letter, May 20, 1933

Engineering

TENTATIVE STANDARD GRAIN SIZE CHARTS FOR CLASSIFICATION OF STEELS—*American Society for Testing Materials,* 25c.

Science News Letter, May 20, 1933

Mathematics

PLANE GEOMETRY—A. M. Welchons and W. R. Krickenberger—*Ginn and Company,* 370 p., $1.28.

Science News Letter, May 20, 1933

Mathematics

SOLID GEOMETRY—A. M. Welchons and W. R. Krickenberger—*Ginn and Company,* 251 p., $1.24. New textbooks by Indianapolis high school teachers.

Science News Letter, May 20, 1933

Endocrinology

GIANTS AND DWARFS, A STUDY OF THE ANTERIOR LOBE OF THE HYPOPHYSIS — Palmer Howard Futcher—*Harvard University Press,* 80 p., $1.25. This thesis reviews the subject from the early Greek myths of giants to modern investigations of the anterior lobe of the pituitary gland, or hypophysis, and its powerful hormones.

Science News Letter, May 20, 1933

Psychology

THE ADOLESCENT BOY—Winifred V. Richmond—*Farrar and Rinehart* 233 p., $2.50. Twelve years of teaching adolescents and 15 years of psychiatric work, observing at first hand what happens when adolescents do not solve their problems and adjust to their environment, make Dr. Richmond peculiarly qualified to advise parents and teachers in this regard. The book is mainly devoted to the normal youth, although deficiencies and abnormalities and the delinquent boy are also discussed.

Science News Letter, May 20, 1933

Chemistry

THE SIGNIFICANCE OF PHOSPHORIC ESTERS IN METABOLISM—Robert Robison—*New York University Press,* 104 p., $2. The three lectures on the Christian A. Herter Foundation of New York University delivered by Prof. Robinson in 1931 are presented in this volume with illustrative plates and diagrams. The lectures are too technical for the average lay reader, but students of this important subject who were unable to hear Prof. Robison's lectures will be glad to read this presentation of his views and investigations.

Science News Letter, May 20, 1933

Chemistry

LABORATORY TECHNIQUE OF ORGANIC CHEMISTRY—J. C. Colbert—*Century,* 341 p., $2.50. A manual of experiments in organic chemistry intended for use with the author's text "A Shorter Course in Organic Chemistry."

Science News Letter, May 20, 1933

Engineering

PROCEEDINGS OF THE 38TH CONVENTION, 1932-33, Vol. 38—*American Society of Municipal Engineers,* 693 p., $7.

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•First Glances at New Books

Additional Reviews on Page 319

Conservation

GAME MANAGEMENT—Aldo Leopold—*Scribner's*, xxi+479 p., $5. With the increasing interest in sports and outdoor diversions generally arising coincidently with the necessity for returning marginal lands to non-agricultural forms of production, the subject of game management is very much to the fore. This book will make an excellent *vade-mecum* for landowners who wish to stock part of their holdings with bobwhite, grouse or pheasant, as well as for wardens, rangers and others professionally concerned with the care of wild birds and animals.

Science News Letter, May 20, 1933

Dendrology

THE CULTIVATED CONIFERS IN NORTH AMERICA—Liberty Hyde Bailey—*Macmillan*, 404 p., 48 pl., $7.50. A book by Liberty Hyde Bailey needs no blurb, especially if it be a book of encyclopedic scope about any group of cultivated plants. It need merely be said that in conciseness and completeness of text and in appropriateness and clearness of illustrations this volume is up to the Bailey standard.

Science News Letter, May 20, 1933

Floriculture

THE FLORIST BUSINESS—E. A. White—*Macmillan*, xiv+426 p., $4. An intensely practical book, going into all phases of the growing of flowers for the trade, both under glass and out of doors.

Science News Letter, May 20, 1933

Botany

A TEACHING GUIDE TO THE TREES AND SHRUBS OF GREATER NEW YORK—A. H. Graves and Hester M. Rusk—*Brooklyn Botanic Garden*, 76 p., 1 map, 75c. Although intended primarily for instructional use, this little book will doubtless be welcomed by many visitors to and residents in New York who want to know something about the woody plants of the region.

Science News Letter, May 20, 1933

Horticulture

THE FRAGRANT PATH—Louise Beebe Wilder—*Macmillan*, 407 p., $3. Of recent years man has neglected his nose, and only modern advertising for soaps and mouth-washes is making him scent-conscious again. The present author attacks the same problem from its obverse and much pleasanter side, by showing how many gardens may be planned to be olfactory as well as optical delights.

Science News Letter, May 20, 1933

Ichthyology

FISHES AND FISHING IN LOUISIANA—J. N. Gowanloch—*Louisiana Dept. of Conservation*, 638 p., 10 pl., 2 maps, 50c. A remarkably complete publication, approaching fish from the points of view of the ichthyologist, the sportsman, and (by no means least) the cook.

Science News Letter, May 20, 1933

Explorations—General Science

EXPLORATIONS AND FIELD WORK OF THE SMITHSONIAN INSTITUTION IN 1932—W. P. True, Editor—*Smithsonian Institution*, 96 p., 98 fig. From "Harvesting fossil sea lilies in the Ohio Valley" to "Recording Seminole Songs in Florida" runs the record of the Smithsonian's year in the field. In twenty-four brief narratives, the field experiences of the past year, and the results attained, are told.

Science News Letter, May 20, 1933

Horticulture

CLIMBING ROSES—G. A. Stevens—*Macmillan*, 220 p., $2. Discussion of types of climbing roses, with suggestions for their proper handling. There is a long annotated list of recognized named varieties, with many colored and halftone illustrations.

Science News Letter, May 20, 1933

Chemistry

LABORATORY STUDIES IN GENERAL CHEMISTRY—William F. Ehret—*Century*, 309 p., $1.50. A laboratory guide and book of directions written by the associate professor of chemistry, Washington Square College.

Science News Letter, May 20, 1933

Physics

PROGRESSIVE PROBLEMS IN PHYSICS—Fred R. Miller—*Heath*, 225 p., $1.32. A completely revised edition of a book of 1370 problems for use in physics courses of high schools and normal schools.

Science News Letter, May 20, 1933

General Information

THE NEW INTERNATIONAL YEAR BOOK, 1932—Edited by Frank H. Vizetelly—*Funk and Wagnalls*, 856 p., $6.25. This one-volume encyclopedia of the world's progress in 1932 contains articles on such matters of immediate interest as the Century of Progress exposition in Chicago, the agricultural crisis, and the Manchukuo problem.

Science News Letter, May 20, 1933

Anthropology

THE GEOGRAPHIC FACTOR—R. H. Whitbeck and Olive J. Thomas—*Century*, 422 p., $2.25. An anthropological survey of the world, popularly presented, with special reference to the modifying influences of climate, migration routes, mountain and ocean barriers, and other geographic factors.

Science News Letter, May 20, 1933

Ornithology

MANUAL FOR THE IDENTIFICATION OF THE BIRDS OF MINNESOTA AND THE NEIGHBORING STATES—Thomas S. Roberts—*Univ. of Minn. Press*, xiii+279 p., $1.50. A well worked out descriptive "key," with line illustrations to help the beginner.

Science News Letter, May 20, 1933

Zoology

INVERTEBRATE ZOOLOGY — Robert W. Hegner—*Macmillan*, 570 p., $3.75. The generations of students, many of them now teachers in their turn, who cut their zoological eyeteeth on Hegner's textbook of zoology will welcome this new text of invertebrate zoology with the greatest interest.

Science News Letter, May 20, 1933

Engineering-Physics

EXAMPLES IN THE THEORY OF STRUCTURE—J. W. Landon—*Macmillan*, 95 p., $1.35. A book of problems the solutions of which requires something more than substituting numbers in a formula. While prepared for British conditions instructors of elementary theory of structure classes in American universities should find the work useful when used in connection with their lecture courses.

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